

Heat Injury Prevention



3D Marines

Factors Increasing the Risk of Heat Injuries

- **Illness**
- **Alcohol and Caffeine**
- **Drugs containing ephedrine, such as certain cold medications and exercise supplements**
- **Exercising during the heat of the day**
- **Ignoring flag conditions**



Flag Warning System

- Readings taken every hour.
- Depending on reading, colored flag is raised indicating how much exercise can be done by acclimatized individuals.



Green Flag

- **W. B. G. T. = 82° to 84.9°F**
- **Discretion required in planning heavy exercise for unseasoned personnel.**



Yellow Flag

- **W. B. G. T. = 85° to 87.9°F**
- **Strenuous exercise and activity should be curtailed for new and unseasoned personnel during the first 3 weeks of exposure.**



Red Flag

- **W. B. G. T. = 88° to 88.9°F**
- **Strenuous exercise curtailed for all personnel with less than 12 weeks training in hot weather.**



Black Flag

- **W. B. G. T. = 90°F and above**
- **Physical training and strenuous exercise suspended for all personnel.**



Flag Conditions

MCO 6200.1D

COLOR

WBGT INDEX

ACTIVITY

GREEN

80 - 84.9

****** Use discretion

in
persons

YELLOW

85 - 87.9

unacclimated
****** Stop strenuous

activity

persons

RED

88 - 89.9

for unacclimated
****** Stop strenuous

exercise

with less

for personnel

living in

BLACK

90.00+

than 12 weeks

****** Stop ALL
hot weather

physical

activity EXCEPT
mission essential



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Prevention

- **Take time to acclimatize.**
- **Drink plenty of fluids.**
- **Eat a good diet and adequate rest.**
- **Exercise during the cooler times of day.**
- **Wear light weight, loose fitting clothing.**



Heat Injury Prevention references --

- MCO 6200.1d W/CH 1
- NAVMED P-5010-3 (Rev. 1974)
- BUMEDINST 6260.2b
- NAVMED P-117, Manual of the Medical
Department
- NAVMED P-5052-5, Occupational and
Environmental Health



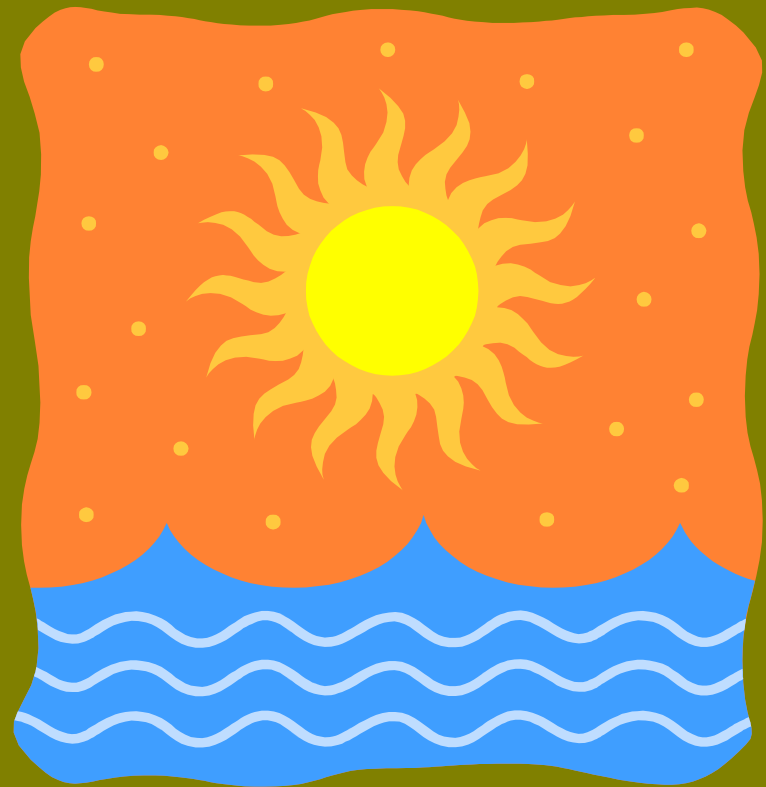
Four Types of Heat Injuries

- Sunburn – 1st & 2nd degree.
- Heat cramps – excessive salt loss through sweating.
- Heat exhaustion – peripheral vascular collapse due to excessive water and salt depletion.
- Heat stroke – collapse of the body's thermal regulatory mechanism. True medical emergency.



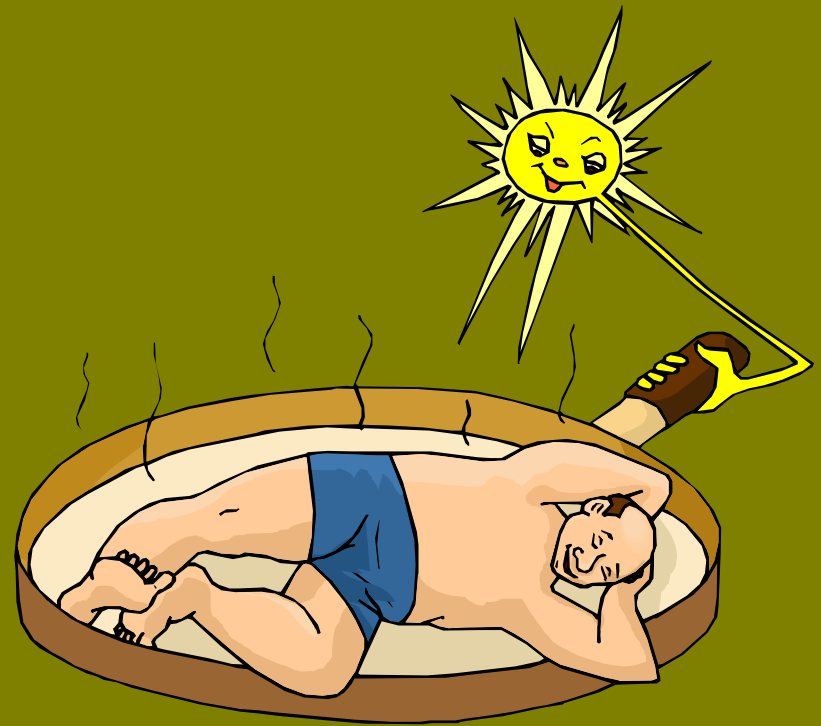
Heat Injury Prevention

- Weather conditions on island during the spring and summer months will be hot and humid placing personnel at high risk for heat injury, if prevention is not diligently practiced.
- Failure to take proper precautions can compromise physical and mental health and performance, jeopardizing the success of military mission.



Sunburn

- Caused by overexposure to the sun's ultraviolet rays, resulting in 1st degree burns to exposed areas with 2nd degree burns (blistered skin) possible with increased risk of secondary infection.
- The prevention is simple: minimize exposure, cover exposed skin, wear hats & sunglasses, and apply sunblock with an minimum SPF of 15 but an SPF of 30-45 is strongly recommended.



Heat Cramps

- Painful and severe cramps of the voluntary muscles primarily in the arms, legs and abdomen, related to excessive salt loss through sweating.
- Heat cramps differ from exertional muscle cramps in that the entire muscle is not affected and heat cramps are observed primarily in unacclimated personnel, usually appearing after the cessation of exertion.
- If heat cramps occur, stop the activity and move to a cool, shaded area for rest. Continue cooling and replace fluids/electrolytes.



Heat Exhaustion

- Results from peripheral vascular compromise due to excessive water and salt depletion.
- Symptoms include profuse sweating, cool/clammy skin, headache, nausea, and vomiting. May become faint with loss of consciousness, mental status will remain normal.
- Treatment consists of prompt cooling by loosening clothing, pouring cool water over the victim, moving to a cooler environment and fluid replacement.



Heat Stroke

- A true medical emergency that is life threatening if not treated promptly and correctly.
- Is the result of a collapse of the body's thermal regulatory mechanism; or rather a shutting down of the body's cooling system.
- Early symptoms may include dizziness, weakness, nausea, headache, confusion, disorientation, drowsiness and irrational behavior.
- The skin may be hot, dry, and flushed (red). Unable to sweat.
- Treatment is to activate EMS immediately. Rapidly cool the patient, move to shaded area or indoors (A/C). Remove or loosen the clothing, pour copious amounts of cool water over the victim and fan to aid cooling. Do not give anything to drink if patient has altered mental status



Your brain in the
heat



Successful Prevention of Heat Injuries

- Education and insisting that all Marines and sailors observe the following measures designed to reduce the likelihood of heat injuries.
 - Acclimatization.
 - Appropriate hydration.
 - Proper Clothing.
 - Proper nutrition.
 - Scheduling exercise at “cool” times of the day.
 - Monitoring of signs & symptoms.



Acclimatization

- Follow unit procedures (MCO).
- Minimum period for units and individuals is three weeks (21 days).
- It must be stressed that all personnel need to acclimatize, not just those new to the island and it's weather conditions.



Water Intake

- Personnel should drink plenty of fluids throughout work and liberty... i.e...Water, sports drinks, Gatorade.
- A quick and reliable test of adequate hydration is urine output.
 - Individuals are adequately hydrated if their urine is clear to pale yellow and does not have a strong odor.

Thirst is not a reliable indicator.



Proper Nutrition

- Salt tablets should be avoided
- Adequate salt intake is achieved through a balanced diet
- Eat from the four basic food groups



Clothing

- Light colored
- Layered and loose fitting
- Uniforms should not be heavily starched since starch blocks the pores in the fabric and may restrict air circulation



Monitoring & Scheduling

- Supervisors must monitor personnel under their charge during unit movements, such as PT and other strenuous activities, and keep a watchful eye on the posted flag conditions
- Schedule PT and unit training during hours early and late in the day when heat and humidity are lower can help prevent personnel from becoming heat casualties



Risk Factors

- The following factors predispose individuals to heat injuries:
 - Pre-existing illness such as the common cold and diarrhea
 - The use of body building supplements containing ephedra and caffeine
 - History of heat injuries
 - Poor physical conditioning
 - Lack of muscle tone and obesity
 - The use of alcohol, products containing caffeine, cold medications and improper acclimatization



Signs of Dehydration

- Dryness in the mouth (cotton mouth)
 - Shortness of breath
 - Headache
- Decrease and/or discoloration in urine
- Nausea and/or vomiting, loss of appetite
 - Loss of coordination
 - Increased heart rate
 - Confusion
- Elevated core temperature



HYDRATION ANALYSIS CHART

URINE COLOR



OK



DRINK 1 CANTEEN



DRINK 1 CANTEEN OVER 15 MINUTES



DRINK 2-3 CANTEENS OVER 60 MINUTES



Note: 1 Canteen = 1 Quart

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PREVENTING HEAT INJURY

Before PT:

- Daily intake of at least eight glasses (8 ozs. per glass).
- Increase water intake with activity or hot weather. Drink two glasses of water 15-30 minutes prior to exercise.



During PT:

- Drink small amounts of fluid gradually to avoid dehydration (6-8 ozs. of cool fluid during exercise at 10-15 minute intervals.)

- If the activity is greater than 90 minutes, drink watered down fruit juice or a sports drink [6-8% glucose (sugar) solution]

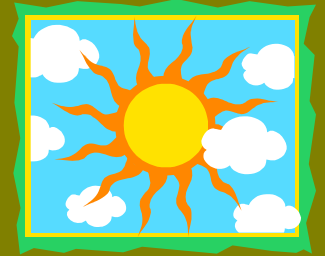


Remember This!!!



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HEAT EXHAUSTION



Symptoms:

- * Fatigue, weakness, dizziness, or nausea
- * Cool, clammy, pale, red or flushed skin
- * Excessive sweating

Treatment:

- * Get out of the sun to a cool spot and drink lots of cool water, a little at a time. If you are nauseated or dizzy, lie down.



Ref: Healthwise Handbook, 13th edition

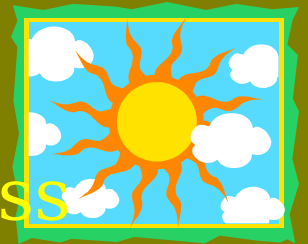
SD Marines

Seek medical assistance ASAP.

HEAT STROKE

Symptoms:

- Confusion, delirium, or unconsciousness
- Hot, dry, red or flushed skin, even under armpits.



Treatment:

1- Call 911 or seek emergency assistance.

2- If the body temperature reaches 105`, immediately

strip clothing down to underwear. Sponge the body



with cool water and fan to lower the body temperature.

Questions?



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